

Claims

We claim:

1. A powered wheelchair adapted to facilitate transport, said powered wheelchair having a power supply unit, a pair of primary drive wheels, a drive train subassembly rotatably mounting and independently driving one of the drive wheels, the powered wheelchair further comprising:

first and second main frame subassemblies each mounting one of the drive train subassemblies and detachably mounting the power supply unit therebetween;

at least one cross member connecting said main frame subassemblies when assembled for operation, said cross member being detachable to separate said subassemblies during transport;

said first and second main frame subassemblies and said cross member, in combination, defining a main frame assembly; and

a seat detachably mounted to said main frame assembly

2. The powered wheelchair according to claim 1 further comprising:

at least one seat supporting cross member having at least one end detachably mounting to one of said main frame subassemblies; and

said seat detachably mounting to said seat supporting cross member.

3. The powered wheelchair according to claim 2 wherein at least one of said seat supporting cross members comprises:

a substantially horizontal span bar,

a substantially vertically oriented post connecting to each of the main frame subassemblies, and

a means for detachably mounting an end of said span bar to one of said vertical posts, and a means for pivotally mounting the other end of said span bar to the other vertical post about its longitudinal axis.

4. The powered wheelchair according to claim 3 wherein said span bar extends laterally from one of said main frame subassemblies to the other, wherein each of said vertical posts has a spherical head and,

said detachment means includes a ball clamp disposed at each end of said span bar for detachably mounting to said spherical head of each said ball post.

5. The powered wheelchair according to claim 2 wherein,

when assembled for operation, said seat supporting cross member having each end thereof mounting to each of the main frame subassemblies to structurally interconnect said subassemblies, and

when disassembled for transport, said seat supporting cross member having both ends thereof mounting to the same main frame subassembly to function as a handle for manipulating said subassembly.

6. The powered wheelchair according to claim 5 wherein at least one of said seat supporting cross members comprises:

a substantially horizontal span bar,

a substantially vertically oriented post connecting to each of the main frame subassemblies, and

a means for detachably mounting an end of said span bar to one of said vertical posts, and a means for pivotally mounting the other end of said span bar to the other vertical post about its longitudinal axis.

7. The powered wheelchair according to claim 6 wherein said span bar extends laterally from one of said main frame subassemblies to the other, wherein each of said vertical posts have a spherical head and,

said detachment means includes a ball clamp disposed at each end of said span bar for detachably mounting to said spherical head of each said ball post.

8. The powered wheelchair according to claim 5 wherein at least one of said seat supporting cross members is pivotally and articulately mounted to one of said main frame subassemblies.

9. The powered wheelchair according to claim 2 wherein each of said cross members is vertically adjustable to vary the height thereof relative to the main frame subassemblies.
10. The powered wheelchair according to claim 5 wherein at least one of said cross members is pivotally and articulately mounted to one of said side frame supports.
11. The powered wheelchair according to claim 5 wherein at least one said seat supporting cross members comprises:
- a substantially horizontal span bar, and
 - a substantially vertical post mounted to each end of said span bar, each of said posts having a series of longitudinally spaced-apart horizontal apertures, and
 - wherein each of the main frame subassemblies includes
 - a sleeve disposed along an upper side frame support thereof, each of said sleeves having a vertical aperture for accepting said vertical post and
 - at least one horizontal aperture for being aligned with one of said horizontal apertures of said vertical post, and
 - said further comprising,
 - a pin for engaging said aligned apertures for adjusting the vertical height of said cross member.
12. The powered wheelchair according to claim 4 wherein said detachment means includes:
- a ball-clamp having a socket and
 - a spherical head disposed in combination with said vertical post to define a ball post,
 - said socket having a pair of spaced-apart parallel pins and an activation lever,
 - one of said pins being mounted within a slot to permit relative motion therebetween and each of said pins being disposed on each said of a ball post,
 - said activation lever being operable to vary the spacing the pins to capture and release the spherical head of the ball post.

13. The powered wheelchair according to claim 5 wherein said cross members each comprise:

a substantially horizontal span bar,
a pair of substantially vertically oriented posts, each of said posts mounting to one of the main frame subassemblies,
a means for detachably mounting an end of said span bar to one of said vertical posts,
and

a means for pivotally mounting the other end of said span bar to the other vertical post about its longitudinal axis, and

wherein said first and second main frame subassemblies each include a pair of sleeves disposed along an upper side frame support thereof, each of said sleeves having a vertical aperture for accepting one of said vertical posts, and

said detachable mounting means further comprising a collar slideably engaging said span bar for accommodating the spacing between said pair of vertical posts when operating said wheelchair and for accommodating the spacing between vertical posts of the same main frame subassembly when transporting said wheelchair.

14. The powered wheelchair according to claim 1 further comprising:

at least one frontal cross member detachably mounting to one of said main frame subassemblies.

15. The powered wheelchair according to claim 14 further comprising:

a footrest assembly detachably mounting to said frontal cross member.

16. The powered wheelchair according to claim 15 further comprising

a pair of frontal cross members, one end of the pair being hinge mounted to one of the main frame subassemblies and the other end of said pair being detachably mounted to the other of said main frame subassemblies.

17. The powered wheelchair according to claim 16

wherein said hinge mount defines a hinge axis, and

wherein said detachable mount defines a pin axis, said pin axis being orthogonal to said hinge axis.

18. The powered wheelchair according to claim 16

wherein said other end of the pair includes upper and lower clevis attachments, said upper clevis having a forked tongue engaging a fixed clevis pin, and said lower clevis attachment having a hooked tongue engaging a fixed clevis pin.

19. The powered wheelchair according to claim 14 further comprises

a pair of cross members, each said cross member including a segment being affixed to each of said main frame subassemblies, said segment extending laterally to a point midway between said subassemblies, and

wherein said footrest assembly structurally interconnects said segments.

20. The powered wheelchair according to claim 19

wherein similar segments of each cross member are connected by a vertical stanchion, one of said stanchions having a substantially tubular cross section and the other of said stanchions having a substantially U-shaped cross section, said stanchions being mated to form a single vertical support, and

wherein said footrest assembly structurally interconnects said vertical support.

21. The powered wheelchair according to claim 20 wherein said footrest assembly includes a bracket defining a U-shaped channel having a pair of parallel legs, said U-shaped channel capturing the vertical support between said parallel legs of said channel.

22. The powered wheelchair according to claim 1

wherein said power supply unit comprises at least one battery box having runners disposed along the lateral edges thereof; and

wherein each main frame subassembly has a rail mounting along a side frame support thereof,

said runners slideably engaging said rails to structurally interconnect said main frame subassemblies.

23. The powered wheelchair according to claim 22 further comprising a receptacle for receiving electric power from said power supply unit and a latching mechanism for prohibiting electrical connectivity therebetween until said runner has fully engaged said rail.

24. The powered wheelchair according to claim 23 wherein said battery box includes a plug and wherein said latching mechanism includes:

a spring biased retention pin positionable within a channel of said rail, said retention pin being depressed into a recess by said battery box prior to full engagement of said battery box relative to said rail, and projecting outwardly into said channel to retain said battery box when said battery box is fully engaged,

a lever, responsive to the position of said pin, for being rotated into an interfering position between said plug and said receptacle when said pin is recessed and capable of being rotated out of an interfering position when said pin projects into said channel.

25. The powered wheelchair according to claim 1 further comprising:

at least one seat supporting cross member detachably mounting to one of said main frame subassemblies;

a pair of frontal cross member detachably mounting to one of said main frame subassemblies; and

wherein said power supply unit comprises at least one battery box having runners disposed along the lateral edges thereof; and

wherein each main frame subassembly has a rail mounting along a side frame support thereof,

said runners slideably engaging said rails to structurally interconnect said main frame subassemblies, and

said seat detachably mounting to said seat supporting cross member.

26. The powered wheelchair according to claim 25

wherein at least one of said seat supporting cross members comprises:

a substantially horizontal span bar,

a substantially vertically oriented post connecting to each of the main frame subassemblies, and

a means for detachably mounting an end of said span bar to one of said vertical posts, and a means for pivotally mounting the other end of said span bar to the other vertical post about its longitudinal axis;

wherein one end of said pair of frontal cross members is hinge mounted to one of the main frame subassemblies and the other end of said pair is detachably mounted to the other of said main frame subassemblies;

and further comprising:

a receptacle for receiving electric power from said power supply unit; and

a latching mechanism for prohibiting electrical connectivity therebetween until said runner has fully engaged said rail.

27. A powered wheelchair adapted to facilitate transport, said powered wheelchair having a power supply unit, a pair of primary drive wheels, a drive train subassembly rotatably mounting and independently driving one of the drive wheels, the powered wheelchair further comprising:

first and second main frame subassemblies each mounting one of the drive train subassemblies and detachably mounting the power supply unit therebetween;

at least one cross member connecting said main frame subassemblies when assembled for operation, said cross member having a detachable mount disposed at a position between said main frame subassemblies and having at least a portion of said cross member remaining attached to one of said subassemblies when disassembled for transport;

said first and second main frame subassemblies and said cross member, in combination, defining a main frame assembly; and

a seat detachably mounted to said main frame assembly.

28. The powered wheelchair according to claim 27 further comprising:

at least one seat supporting cross member having at least one end detachably mounting to one of said main frame subassemblies; and

said seat detachably mounting to said seat supporting cross member.

29. The powered wheelchair according to claim 28 wherein at least one of said seat supporting cross members comprises:

a substantially horizontal span bar,
a substantially vertically oriented post connecting to each of the main frame subassemblies, and

a means for detachably mounting an end of said span bar to one of said vertical posts, and a means for pivotally mounting the other end of said span bar to the other vertical post about its longitudinal axis.

30. The powered wheelchair according to claim 29 wherein said span bar extends laterally from one of said main frame subassemblies to the other, wherein each of said vertical posts has a spherical head and,

said detachment means includes a ball clamp disposed at each end of said span bar for detachably mounting to said spherical head of each said ball post.

31. The powered wheelchair according to claim 28 wherein,

when assembled for operation, said seat supporting cross member having each end thereof mounting to each of the main frame subassemblies to structurally interconnect said subassemblies, and

when disassembled for transport, said seat supporting cross member having both ends thereof mounting to the same main frame subassembly to function as a handle for manipulating said subassembly.

32. The powered wheelchair according to claim 31 wherein at least one of said seat supporting cross members comprises:

a substantially horizontal span bar,

a substantially vertically oriented post connecting to each of the main frame subassemblies, and

a means for detachably mounting an end of said span bar to one of said vertical posts, and a means for pivotally mounting the other end of said span bar to the other vertical post about its longitudinal axis.

33. The powered wheelchair according to claim 32 wherein said span bar extends laterally from one of said main frame subassemblies to the other, wherein each of said vertical posts have a spherical head and,

said detachment means includes a ball clamp disposed at each end of said span bar for detachably mounting to said spherical head of each said ball post.

34. The powered wheelchair according to claim 31 wherein at least one of said seat supporting cross members is pivotally and articulately mounted to one of said main frame subassemblies.

35. The powered wheelchair according to claim 28 wherein each of said cross members is vertically adjustable to vary the height thereof relative to the main frame subassemblies.

36. The powered wheelchair according to claim 31 wherein at least one of said cross members is pivotally and articulately mounted to one of said side frame supports.

37. The powered wheelchair according to claim 31 wherein at least one said seat supporting cross members comprises:

a substantially horizontal span bar, and

a substantially vertical post mounted to each end of said span bar, each of said posts having a series of longitudinally spaced-apart horizontal apertures, and

wherein each of the main frame subassemblies includes

a sleeve disposed along an upper side frame support thereof, each of said sleeves having a vertical aperture for accepting said vertical post and

at least one horizontal aperture for being aligned with one of said horizontal apertures of said vertical post, and

said further comprising,

a pin for engaging said aligned apertures for adjusting the vertical height of said cross member.

38. The powered wheelchair according to claim 30 wherein said detachment means includes:

a ball-clamp having a socket and
a spherical head disposed in combination with said vertical post to define a ball post,
said socket having a pair of spaced-apart parallel pins and an activation lever,
one of said pins being mounted within a slot to permit relative motion therebetween
and each of said pins being disposed on each said of a ball post,
said activation lever being operable to vary the spacing the pins to capture and release
the spherical head of the ball post.

39. The powered wheelchair according to claim 31 wherein said cross members each comprise:

a substantially horizontal span bar,
a pair of substantially vertically oriented posts, each of said posts mounting to one of
the main frame subassemblies,
a means for detachably mounting an end of said span bar to one of said vertical posts,
and

a means for pivotally mounting the other end of said span bar to the other vertical post
about its longitudinal axis, and

wherein said first and second main frame subassemblies each include a pair of sleeves
disposed along an upper side frame support thereof, each of said sleeves having a vertical
aperture for accepting one of said vertical posts, and

said detachable mounting means further comprising a collar slideably engaging said
span bar for accommodating the spacing between said pair of vertical posts when operating
said wheelchair and for accommodating the spacing between vertical posts of the same main
frame subassembly when transporting said wheelchair.

40. The powered wheelchair according to claim 27 further comprising:

at least one frontal cross member detachably mounting to one of said main frame
subassemblies.

41. The powered wheelchair according to claim 40 further comprising:

a footrest assembly detachably mounting to said frontal cross member.

42. The powered wheelchair according to claim 41 further comprising
a pair of frontal cross members, one end of the pair being hinge mounted to one of the main frame subassemblies and the other end of said pair being detachably mounted to the other of said main frame subassemblies.
43. The powered wheelchair according to claim 42
wherein said hinge mount defines a hinge axis, and
wherein said detachable mount defines a pin axis, said pin axis being orthogonal to said hinge axis.
44. The powered wheelchair according to claim 42
wherein said other end of the pair includes upper and lower clevis attachments, said upper clevis having a forked tongue engaging a fixed clevis pin, and said lower clevis attachment having a hooked tongue engaging a fixed clevis pin.
45. The powered wheelchair according to claim 40 further comprises
a pair of cross members, each said cross member including a segment being affixed to each of said main frame subassemblies, said segment extending laterally to a point midway between said subassemblies, and
wherein said footrest assembly structurally interconnects said segments.
46. The powered wheelchair according to claim 45
wherein similar segments of each cross member are connected by a vertical stanchion, one of said stanchions having a substantially tubular cross section and the other of said stanchions having a substantially U-shaped cross section, said stanchions being mated to form a single vertical support, and
wherein said footrest assembly structurally interconnects said vertical support.
47. The powered wheelchair according to claim 46 wherein said footrest assembly includes a bracket defining a U-shaped channel having a pair of parallel legs, said U-shaped channel capturing the vertical support between said parallel legs of said channel.

48. The powered wheelchair according to claim 27
wherein said power supply unit comprises at least one battery box having runners disposed along the lateral edges thereof; and
wherein each main frame subassembly has a rail mounting along a side frame support thereof,
said runners slideably engaging said rails to structurally interconnect said main frame subassemblies.
49. The powered wheelchair according to claim 48 further comprising a receptacle for receiving electric power from said power supply unit and a latching mechanism for prohibiting electrical connectivity therebetween until said runner has fully engaged said rail.
50. The powered wheelchair according to claim 49 wherein said battery box includes a plug and wherein said latching mechanism includes:
a spring biased retention pin positionable within a channel of said rail, said retention pin being depressed into a recess by said battery box prior to full engagement of said battery box relative to said rail, and projecting outwardly into said channel to retain said battery box when said battery box is fully engaged,
a lever, responsive to the position of said pin, for being rotated into an interfering position between said plug and said receptacle when said pin is recessed and capable of being rotated out of an interfering position when said pin projects into said channel.
51. The powered wheelchair according to claim 27 further comprising:
at least one seat supporting cross member detachably mounting to one of said main frame subassemblies;
a pair of frontal cross member detachably mounting to one of said main frame subassemblies; and
wherein said power supply unit comprises at least one battery box having runners disposed along the lateral edges thereof; and
wherein each main frame subassembly has a rail mounting along a side frame support thereof,

said runners slideably engaging said rails to structurally interconnect said main frame subassemblies, and
said seat detachably mounting to said seat supporting cross member.

52. The powered wheelchair according to claim 51

wherein at least one of said seat supporting cross members comprises:

- a substantially horizontal span bar,
- a substantially vertically oriented post connecting to each of the main frame subassemblies, and
- a means for detachably mounting an end of said span bar to one of said vertical posts, and a means for pivotally mounting the other end of said span bar to the other vertical post about its longitudinal axis;

wherein one end of said pair of frontal cross members is hinge mounted to one of the main frame subassemblies and the other end of said pair is detachably mounted to the other of said main frame subassemblies;

and further comprising:

- a receptacle for receiving electric power from said power supply unit; and
- a latching mechanism for prohibiting electrical connectivity therebetween until said runner has fully engaged said rail.